

REMARKS**Claim Rejections Under 35 U. S. C. § 103****Claims 1-7, 9-11, 13-18, 41, 43-49 and 51**

Claims 1-7, 9-11, 13-18, 41, 43-49 and 51 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mui et al. (U. S. Patent No. 6,235,643) in view of Chang et al. (U. S. Patent No. 6,069,091) and Hause et al. (U. S. Patent 6,051,863).

Claims 1 and 17 are amended to recite, in part, "wherein the desired aspect ratio is greater than about 5:1." The Office Action states that Mui/Hause/Chang et al. lack that the aperture aspect ratio is greater than 5:1. Office Action, page 3, section 8. The Office Action later relies on Wong et al. (U.S. Patent No. 5,874,362) to overcome the deficiency of the cited references. However, Applicant notes that Wong et al. is directed to a process for etching single crystal silicon, polysilicon, silicide and polycide using iodinate and brominates gas chemistry. Wong et al., Abstract. Applicant contends that etching these silicon, polysilicon, silicide and polycide materials is not applicable to etching of silicon oxide as recited in claim 1 as the chemistries are inherently different. Furthermore, Wong et al. states that etch selectivity of its chemistry to oxide is excellent, indicating that Wong et al. was focused on keeping its oxide masks intact rather than etching them, thus expressly teaching away from modifying the Mui/Hause/Chang et al. references to etch high aspect ratio apertures in silicon oxide. Wong et al., column 5, lines 21-22. In fact, Wong et al. starts its process after the formation of its oxide mask 33, and thus has already etched through the oxide prior to use of its brominate and iodinate etching gas chemistry. Wong et al., column 5, lines 45-55. In view of the foregoing, Applicant contends that claims 1 and 17 are patentably distinct from the cited references, either alone or in combination. As claims 2-7, 9-11 and 13-16 depend from and further define patentably distinct claim 1, and claim 18 depends from and further defines patentably distinct claim 17, these claims are also believed to be allowable.

Claim 41 is amended to recite, in part, "after forming the polymer residue on the sidewalls of the silicon oxide layer, adding at least one second source gas to the plasma while continuing to advance the etch front, wherein each at least one second source gas contains an

element selected from the group consisting of bromine and iodine.” Claim 49 is amended to recite, in part, “after forming a polymer residue on the sidewalls of the silicon oxide layer, adding at least one second source gas to the plasma while continuing to advance the etch front, wherein each at least one second source gas is a bromine-containing gas.” The Office Action states that Mui/Hause/Chang et al. lack an additional gas added after forming the polymer residue. Office Action, page 3, section 8. Applicant thus contends that claims 41 and 49 are patentably distinct from the cited references, either alone or in combination. As claims 43-48 depend from and further define patentably distinct claim 41, and claim 51 depends from and further defines patentably distinct claim 49, these claims are also believed to be allowable.

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a), and allowance of claims 1-7, 9-11, 13-18, 41, 43-49 and 51.

Claims 8, 12, 19-40, 42, 50 and 52-56

Claims 8, 12, 19-40, 42, 50 and 52-56 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mui et al., in view of Hause et al., and Chang et al., and further in view of Wong et al. (U. S. Patent No. 5,874,362).

Applicant contends that it has shown claims 1, 17, 41 and 49 to be patentably distinct over Mui et al. in view of Hause et al., Chang et al. and Wong et al. As claims 8 and 12 depend from and further define patentably distinct claim 1, claim 42 depends from and further defines patentably distinct claim 41, and claims 50 and 52 depend from and further define patentably distinct claim 49, these claims are also believed to be allowable.

Claim 8 recites, in part, “wherein modifying a composition of the plasma occurs during etching an exposed portion of the silicon oxide layer.” As noted above, the Office Action admits that Mui et al., Hause et al. and Chang et al. fail to teach this limitation. Applicant further contends that Wong et al. cannot be used to modify these references as it is directed to etching of silicon, polysilicon, silicide or polycide while avoiding etching of silicon oxide. Even if modification of Mui et al., Hause et al. and Chang et al. were proper in view of Wong et al., which Applicant denies, the combination would still fail to teach or suggest at least this limitation as Applicant finds no teaching or suggestion in Wong et al. to modify the composition

of its plasma during etching of a silicon oxide layer. Accordingly, Applicant contends that the cited references, either alone or in combination, fail to teach or suggest each and every limitation of claim 8.

Claim 19 recites, in part, "generating a plasma containing fluorine and iodine." As noted above, the Office Action admits that Mui et al., Hause et al. and Change et al. fail to teach at least this limitation. The Office Action relies on Wong et al. to cure this deficiency, but Applicant contends that Wong et al. is not directed to etching silicon oxide, and in fact teaches away from etching silicon oxide as its uses silicon oxide as a mask for its etch chemistry. Because there is no motivation or suggestion to modify the primary references to include a plasma containing iodine, and Wong et al. expressly teaches away from such modification, Applicant contends that the Office has failed to make a *prima facie* case of obviousness. Applicant thus contends that claim 19 is patentably distinct from the cited references, either alone or in combination.

Claims 20, 25 and 28 recite, in part, "continuing to advance the etch front until a desired aspect ratio is attained, wherein the desired aspect ratio is greater than about 8:1." Claims 29, 37 and 39 recite, in part, "continuing to advance the etch front until a desired aspect ratio is attained, wherein the desired aspect ratio is greater than about 5:1." As noted above, the Office Action admits that Mui et al., Hause et al. and Change et al. fail to teach at least these limitations. The Office Action relies on Wong et al. to cure this deficiency, but Applicant contends that Wong et al. is not directed to etching silicon oxide, and in fact teaches away from etching silicon oxide as its uses silicon oxide as a mask for its etch chemistry. Because none of the cited references teaches or suggests an aspect ratio of greater than about 8:1 in silicon oxide, Applicant contends that the Office has failed to make a *prima facie* case of obviousness. Applicant thus contends that claims 20, 25 and 28 are patentably distinct from the cited references, either alone or in combination. As claims 21-24 depend from and further define patentably distinct claim 20, claims 26-27 depend from and further define patentably distinct claim 25, and claims 30-36 depend from and further define patentably distinct claim 29, claim 38 depends from and further defines patentably distinct claim 37 and claim 40 depends from and further defines patentably distinct claim 39, these claims are also believed to be allowable.

AMENDMENT AND RESPONSE

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Claim 53 is amended to recite, in part, "after forming a polymer residue on the sidewalls of the silicon oxide layer, adding at least one second source gas to the plasma while continuing to advance the etch front, wherein each at least one second source gas is an iodine-containing gas." The Office Action states that Mui/Hause/Chang et al. lack an additional gas added after forming the polymer residue. Office Action, page 3, section 8. Applicant thus contends that claim 53 is patentably distinct from the cited references, either alone or in combination. As claims 54-56 depend from and further define patentably distinct claim 53, these claims are also believed to be allowable.

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a), and allowance of claims 8, 12, 19-40, 42, 50 and 52-56.

CONCLUSION

Claims 1, 17, 41, 49 and 53 are amended herein. Claims 1-56 are now pending.

In view of the above remarks, Applicant respectfully submits that all claims are now in condition for allowance and requests reconsideration of the application and allowance of claims.

The Examiner is invited to contact Applicant's attorney to discuss any questions that may remain with respect to the present application.

Respectfully submitted,

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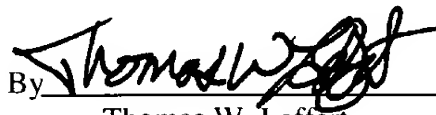
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